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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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YOUNG & THOMPSON
745 SOUTH 23RD STREET 2ND FLOOR
ARLINGTON, VA 22202

EXAMINER	
SUNG, CHRISTINE	
ART UNIT	**PAPER NUMBER**
2878	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/849,524	Applicant(s) LANNESTEDT ET AL.	
	Examiner Christine Sung	Art Unit 2878	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 May 2001* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-65* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,6,10-19,23,27-38 and 46-59* is/are rejected.

7)☒ Claim(s) *4,5,7-9,20-22,24-26,39-45 and 60-65* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *07 May 2001* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *4,5* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Specification

1. A substitute specification including the claims is required pursuant to 37 CFR 1.125(a) because the specification contains numerous grammatical and spelling errors and the claims do not contain a consistent format and also include numerous grammatical and spelling errors.

A substitute specification filed under 37 CFR 1.125(a) must only contain subject matter from the original specification and any previously entered amendment under 37 CFR 1.121. If the substitute specification contains additional subject matter not of record, the substitute specification must be filed under 37 CFR 1.125(b) and must be accompanied by: 1) a statement that the substitute specification contains no new matter; and 2) a marked-up copy showing the amendments to be made via the substitute specification relative to the specification at the time the substitute specification is filed.

The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Drawings

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: Figure 1A, element 25. A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Objections

3. Claims 1, 3, 4, 9, 17, 18, 25, 30, 32, 34, 35, 39, 49, 54 and 62 are objected to because of the following informalities:

Regarding claims 1 and 35, the claims state an "absorbent/emitting shielding" device. The examiner understands from the specification that the shield includes the ability to both absorb and emit the incoming IR radiation, however the claim invention is unclear. The claim could read absorbent and emitting, or absorbent or emitting, or absorbent and/or emitting. Further for similar reasons claims 17, 32, 49 and 54 are also objected to because they contain the phrase "lens/filter", and it is unclear if the claim includes either features or both features.

Regarding claims 3, 4, and 39, the claims contain the phrase "absorbent shielding." The independent claims that these claims depend upon disclose an absorbent/emitting shielding. Therefore, there is insufficient antecedent basis for this limitation in these claims.

Regarding claims 9, 25 and 62, the phrase "simple wedge" is disclosed in the claims. The claims are objected to because the term "simple" indicates informal language.

Regarding claims 30, 34 and 47, the phrase "such as" renders the claims indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention.

Applicant is advised that should claim13 be found allowable, claim 18 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claims 5-9, 10-19, and 36-51 are all objected to as being dependent on rejected claims 4, 1, and 35, respectively.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 6 and 23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claims state a "focal plane array having a small size," but it is unclear as to what defines small.

6. Claims 12, 14, 17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claims disclose an "informative means" but it is unclear as to what is defined as being informative.

7. Claims 29, 30, 46 and 47 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claims disclose a "specific means" and a "said specific focusing means" but it is unclear as to what is defined as being specific.

8. Claim 31 recites the limitation " said optical component" in line 2 of the claim. There is insufficient antecedent basis for this limitation in the claim.

9. The balance of these claims 13, 16-19, 15 and 30-34 are rejected for being dependent on an already rejected claim.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

12. Claims 1, 2, 10-19, 27-34, 37-38 and 52-59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wood (US Patent 5,420,419) in view of Sekida (US Patent 3,961,347).

Regarding claim 1, Wood discloses an IR focal plane array (FPA) comprising a number of detector elements as a sensor means (Figure 2, element 30); an optical system focusing an object onto the FPA (Figure 1, element 71); a signal processing system connected to the FPA (Figure 1, elements 73, 74, 78, 80); a camera housing for the FPA (Figure 2, elements 11 and 16); and an absorbent/emitting shielding device or a window (element 40) that allows particular wavelengths of radiation to pass or emit to the FPA and unwanted radiation is absorbed or reflected by the window (Column5, lines 31-34). Wood discloses that the optical focusing system is attached to the shielding or window device, but fails to specifically disclose that the

optical focusing system is removable. Sekida discloses a camera with a removable or interchangeable lens for use in a camera. It would have been obvious to one having ordinary skill in the art to have used the interchangeable optical lens system in Sekida with the invention disclosed by Wood, to have the ability to adapt the camera, as disclosed by Wood, for different focal lengths.

Regarding claim 2, Wood further discloses a thermoelectric controller (Figure 1, element 73), that receives signals from the FPA, and adjusts the temperature of the array to a predetermined stabilization temperature (Column 2, lines 34-38). The aforementioned process discloses a program in the processing system that adapts the signals from the detector (from the FPA), to features (i.e. temperature) of the surroundings of the FPA. Further it also includes feeding the information about the features (i.e. temperature) to the signal processing system.

Regarding dependent claim 10, and independent claim 27, Wood discloses that the shutter or iris (Figure 1, element 72) is normally open (Column 3, lines 46-49) during use and is located between the focusing system and the FPA. Further the shutter can be closed (Column 3, lines 40-43), cutting off any radiation to the FPA. It would have been obvious to note that the processor disclosed would produce little or no signals due to the fact that the FPA is no longer exposed to the radiation. Further, this could be defined as a steady state.

Regarding claims 12, 14, 29, 30, 52 the claim discloses a focusing system that detects a certain property of the focusing system then, downloads the corresponding signal and adjusts the camera to correct for that signal. Wood discloses that the optical system is closed, at the start-up of the camera, and further discloses taking several images, for data calibration purposes (column

3, lines 40-63). These signals are saved into a long-term memory, and are used to adjust the camera signals or data.

Regarding claims 13, 15, 16, 17, 18, 31, 32, 33, 53-56 the claims disclose an optical system, which is exchangeable with a code, and further discloses a code reading means to calibrate the IR camera. As disclosed above Sekida discloses an exchangeable optical system when used with Wood's invention contains a specific property or code, which is detected during the calibration of the system. This specific property of the optical system is stored in the long-term memory of the image processor, and is used to adjust the camera properties, such as transmission parameters, as disclosed above (Column 3, lines 40-63). Further, the stored information is restored so long as the focal plane, and temperature of the device is not changed.

Regarding claims 19, 34 and 57 the claims include the use of a temperature sensor to aid in the calibration parameter. Wood discloses a temperature stabilizer or sensor to aid in the calibration of the optical system (Column 3, lines 40-63).

Regarding claim 58, the claim discloses detecting that the shutter is closed, and an indication that the FPA has reached a steady state after the shutter has closed. As disclosed above, the shutter or iris is often closed at different intervals to create a calibration standard, i.e. to measure the background noise to be filtered out for a set temperature. A steady state measurement can include a calibration or zero measurement, as disclosed in the reference. The FPA receives the signals after the shutter is closed, and records them in the long-term memory for future use.

Regarding claim 37, Wood discloses a normally open shutter (Column 3, lines 46-47), that can be closed or partially closed (Column 3, lines 40-63), and when the shutter is closed, the

FPA does not receive radiation from the object. As disclosed above, it further includes detecting a steady state signal and creating a calibration curve or makes the data available, so that it can be subtracted from the collected data.

Regarding claims 11, 28, 38 and 59, it is well known in the art and demonstrated by Wood that a calibration curve or a steady state can be recorded, so as to subtract out noise from the collected data. Although Wood does not explicitly use a histogram to create the steady state, such is well known, and he does collect and store the data for later use for the same function as the histogram.

13. Claims 1, 3, 35 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Black (US Patent 6,288,387) in view of Sekida (US Patent 3,961,347).

Regarding the independent claim 1, Black discloses an IR focal plane array (FPA) comprising a number of detector elements as a sensor means (Figures 3 and 4, element 14); an optical system focusing an object onto the FPA (Figures 3 and 4, element 19); a signal processing system connected to the FPA (Column 6, lines 25-48); a camera housing for the FPA (See figure 3); and an absorbent/emitting shielding device or cold shield (Figure 4, element 26) that allows particular wavelengths of radiation to pass or emit to the FPA and unwanted radiation is absorbed by the cold shield (Column 4, lines 67-68). Black discloses that the optical focusing system is attached to the shielding or window device, but fails to specifically disclose that the optical focusing system is removable. Sekida discloses a camera with a removable or interchangeable lens for use in a camera. It would have been obvious to one having ordinary skill in the art to have used the interchangeable optical lens system in Sekida with the invention

disclosed by Wood, to have the ability to adapt the camera, as disclosed by Wood, for different focal lengths.

Regarding claim 3, Black further discloses that the cold shield and the FPA are both thermally coupled (column 5, lines 1-5) and are held in place together by the housing (see figures 3 and 4).

Regarding claim 35, Black discloses an IR FPA (Figure 3, element 14), in a housing attached to a processing system (Column 6, lines 25-48) and an optical focusing system. Further, Black discloses connecting the absorbent/emitting shielding device to the housing, via the FPA, thus allowing it to be removable from the housing. Also, as disclosed above, Sekida discloses the exchangeability of the lens system.

Regarding claim 36, the claim states the measurement of a signal from the FPA is taken, defining the surroundings of the FPA, and the signals are fed to the signal processing system in order to adjust the surroundings. Black discloses a cold finger (element 25) of a cryogenic cooler that cools the FPA to a temperature below room temperature. Further, it is inherent that a temperature reading or signal must be taken from the FPA to determine the temperature of the FPA, which is fed to the processor or the cryogenic cooler to adjust the surroundings, i.e. desired temperature.

14. Claims 46-51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Black (US Patent 6,288,387) in view of Sekida (US Patent 3,961,347) further in view of Wood (US Patent 5,420,419).

Regarding claims 46-48, Black in view of Sekida discloses the limitations set forth in claim 35 but fails to disclose a method of detecting a specific property of the optical system or

component and the method of downloading the corresponding signal and adjusting the camera to correct for that signal. Wood discloses that the optical system is closed, at the start-up of the camera, and further discloses taking several images, for data calibration purposes (column 3, lines 40-63). These signals are saved into a long-term memory, and are used to adjust the camera signals or data. Further the signals may entail the use of a code, or designated signal. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have use the signaling method as disclosed by Wood with the invention disclosed by Black and Sekida to provide a calibration system for the invention to which the measured signals can be subtracted and further provide a data set with greater accuracy.

Regarding claims 49 and 50, as disclosed above, Black in view of Sekida discloses the limitation set forth in claim 35, but does not disclose the detection of optical properties as start information nor do they disclose storing the information related to the properties nor restoring the information when the component is reinserted. Wood discloses an optical system, which is exchangeable with a code, and further discloses a code reading means to calibrate the IR camera. As disclosed above Sekida discloses an exchangeable optical system when used with Wood's invention contains a specific property or code, which is detected during the calibration of the system. This specific property of the optical system is stored in the long-term memory of the image processor, and is used to adjust the camera properties, such as transmission parameters, as disclosed above (Column 3, lines 40-63). Further, the stored information is restored so long as the focal plane, and temperature of the device is not changed. It would have been obvious to one having ordinary skill in the art at the time the invention was made, to have used the invention disclosed by Black and Sekida with the invention disclosed by Wood to further enhance the

accuracy of the data acquired, because having calibrated start up properties and predetermined calibrations allow the measured signals to be referenced.

Regarding claim 51, Black in view of Sekida fail to disclose the use of a temperature sensor to aid in the calibration of the system. Wood discloses a temperature stabilizer or sensor to aid in the calibration of the optical system (Column 3, lines 40-63). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have used the temperature sensor as disclosed by Wood with the invention disclosed by Black and Sekida because variations in temperature severely affect the measured data, and monitoring the temperature is crucial to the accuracy of the data collected.

Allowable Subject Matter

15. Claims 4-5, 7-9, 20-22, 24-26, 39-45 and 60-65 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

16. Claims 6 and 23 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

17. The following is a statement of reasons for the indication of allowable subject matter:

Claims 4-7, 5-9, 20-22 and 24-26 disclose that the stray light that enters the cavity must be reflected at least three times before it is permitted to reach the FPA. None of the prior art of record discloses the aforementioned limitation.

Further claims 39-45 disclose a cavity with a ratio of diameter to depth greater than 5 and a radius being at least 3 times the width of the aperture. None of the prior art of record discloses the aforementioned relationships.

Further, claims 60-65 disclose a cavity with a ratio of depth to radius being at least 1 to 5 and a radius being at least 3 times the width of any of said apertures. None of the prior art of record discloses the aforementioned ratio.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christine Sung whose telephone number is 703-305-0382. The examiner can normally be reached on Monday- Friday 7-4 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on 703-308-4852. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-0956 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

CS
April 7, 2003

DAVID PORTA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800